

NOTES ON THE MUSCOID FLIES OF THE GENERA OPELOUSIA AND OPSODEXIA WITH THE DESCRIP- TION OF THREE NEW SPECIES

By H. J. REINHARD
Of College Station, Tex.

During March, 1921, while collecting Diptera at College Station, my attention was drawn by the presence of several small snails which were situated on tree trunks, 3 or 4 feet above the ground. The snails appeared normal and were quite firmly attached to the surface, but upon removing a specimen it was found to contain a dipterous puparium. Further search resulted in taking 16 additional parasitized specimens, each with a single puparium located in the basal end of the chamber. The puparia were placed in breeding cages and 5 male and 12 female flies issued from March 30 to April 15. Judging from the early date of collection, it appears more than likely that this parasitic fly hibernates in the pupal stage within the shell of its host. Examples of the snail were sent to the United States National Museum, where they were determined and accessioned as *Succinea luteola*. Recently Dr. J. M. Aldrich determined the parasite reared from this mollusk as *Opelousia obscura* Townsend.

Genus OPELOUSIA Townsend

The genus *Opelousia* Townsend, with *obscura* (new species) as the type, was erected in 1919¹ for the reception of four male specimens collected at Opelousas, La., and Fargo, N. Dak. Since the original characterizations are brief, lacking in essential data, and do not include the female, a description of this sex is included below with the description of an apparently new species.

OPELOUSIA OBSCURA Townsend

Opelousia obscura TOWNSEND, Proc. U. S. Nat. Mus., vol. 56, 1919, p. 547.

Female.—Blackish brown, thinly cinereous pollinose, subshining. Eyes bare. Front 0.34 of head width (average of six, 0.34, 0.38, 0.33,

¹Proc. U. S. Nat. Mus., vol. 56, p. 547.

0.33, 0.36, 0.33); inner orbits parallel from vertex to base of antennæ. Parafrontal wider than median vitta, which is blackish and extends on each side of ocellar triangle to inner vertical. Ocellars small, proclinate. Inner and outer verticals well developed. Frontals in two rows stopping at base of antennæ. Orbitals two pairs. Antennæ brown, tinged with yellow basally, second joint about one-half length of third, which is straight on the anterior edge and densely covered with whitish pubescence. Arista brownish, thickened only near base, sparsely short-haired on upper side about half-way to tip, basal joints short. Parafacials silvery, bare, narrow, diverging strongly below. Vibrissæ at oral margin usually with one strong and several smaller bristles above on facial ridges, which are rounded and flattened. Facial depression rather shallow and slightly convex but without a carina. Proboscis short, fleshy. Palpi yellow to brownish black, smaller than usual, little or not at all thickened apically, with several black bristles near the apex. Cheeks about one-fourth the eye height, thinly pollinose on a reddish background, with a few short black bristles above the lower marginal row. Occiput cinereous pollinose with only short black bristles.

Thorax and scutellum black, thinly pollinose, subshining, two narrow vittæ indistinctly visible before suture. Chaetotaxy: Acrostichal 0, 1; dorsocentral 2, 3; humeral 2; posthumeral 1; presutural 1; notopleural 2; supraalar 3 (small except middle one); intraalar 2; postalar 2; sternopleural 2; pteropleural 0; scutellum with one large lateral and a decussate apical pair; postscutellum small; infrascutal hairs present; halteres yellow; calypters white.

Abdomen with cinereous pollen tinged with brown on the subshining posterior margins of the first three segments. First segment without median marginals; intermediate segments each with a complete marginal row, no discal; fourth segment with a discal and a marginal row; genital segments blackish basally and yellow apically, without piercer.

Legs brownish yellow, except tarsi which are black; middle tibia with one bristle on outer front side beyond middle; claws and pulvilli short.

Wings subhyaline, rather short and broad to tip; veins yellow, bare except third, which has one large and a few small bristles at the base; costal spine moderately long, usually doubled; fourth vein broadly curved, bend without a definite angle; first posterior cell open or barely closed at or just before tip; hind cross vein about midway between bend and small cross vein; last section of fifth vein about one-fifth the preceding.

Length, 5 to 7 mm.

Described from 24 females reared and collected at College Station, Tex., April to November (H. J. Reinhard); and 1 female collected at San Antonio, Tex., June 21, 1928 (H. B. Parks). The abdomen of the latter specimen was crushed at the time it was pinned and the protruding larvipositor contains a partially visible shriveled white maggot. Additional locality records include La Fayette, Indiana (J. M. Aldrich), and Sugar Grove, Ohio, one male taken June 8, 1926 (D. G. Hall).

OPELOUSIA FLAVESCENS, new species

Male.—Eyes bare. Front very narrow above before ocelli hardly as wide as ocellar triangle; vitta narrow, triangular below and reduced to a line posteriorly, brownish black; parafrontals shining silvery, blackish on the inner margins along the vitta. Frontals in two slightly diverging rows of six to eight short erect bristles barely extending to base of antennae, the uppermost pair hairlike, situated a short distance below the lower ocellus, a few inconspicuous black hairs in the rows but none extending on the parafacials. Inner verticals well developed, outer ones small and hairlike. Ocellars small, proclinate, not divergent; postocellars almost equally strong. Orbitals none. Parafacials shining silvery, bare, diverging strongly below, about equal to width of third antennal segment. Facial depression with cinereous pollen on blackish background, not keeled. Vibrissae large, situated at oral margin, with two or three small bristles above on facial ridges which are rounded and decidedly flattened. Antennae about three-fourths of the length of the face; third joint brown, tinged with yellow basally, especially on inner side, densely covered with white pubescence; second joint entirely yellow, about one-half the length of third. Arista yellowish, slender beyond the very briefly thickened base, sparsely short-haired on upper side about halfway to tip, a few inconspicuous hairs on underside, basal joints short but quite distinct; cheeks about one-fifth the eye height, with only a few scattered short bristles below, densely covered with cinereous pollen. Occiput black, with thin gray pollen, sparsely covered with short black hairs. Proboscis very short, labella large, yellow. Palpi yellow, rather small, apex but slightly thickened, bearing a few black bristles.

Thorax and scutellum black, subshining, the cinereous pollen on mesonotum distinctly tinged with brown, dorsal vittae indistinct. Chaetotaxy: Humeral 2; posthumeral 1; presutural 1; notopleural 2; acrostichal 0, 1 (slightly anterior to hindermost dorsocentrals); dorsocentral 2, 3; intraalar 2; supraalar 3 (small except middle one); postalar 2; sternopleural 2; pteropleural 0; scutellum with two large diverging laterals distinctly nearer the apex than base, between these a smaller decussate apical pair, and usually an addi-

tional weak sublateral and small preapical pair present; postscutellum small; halteres yellow; calypters white; infrasquamal setules present.

Abdomen rather slender, two basal segments either faintly or pronounced yellowish on the sides, otherwise black, subshining; hairs on dorsum erect; entirely covered with cinereous pollen which is thinner on the narrow hind margins of the segments; when viewed from behind a narrow dorsal vitta present which becomes wider basally; first segment with a row of weak marginals which may be hairlike or incomplete above; intermediate segments each with a complete marginal row, no true discal bristles present, although the erect hairs often resemble discals on these segments; fourth segment with a complete marginal and a discal row; venter with long bristly hairs. Genitalia small, outer forceps broad lobelike brownish black, inner forceps yellowish, slender, not divergent, tips black; penis yellow basally, distal segment black, apex expanded in a circular lobe with a narrow whitish border; fifth abdominal sternite prominent, deflected downward, broadly incised, bearing fine black hairs on the lateral margins.

Legs yellow basally, tarsi black; middle tibia with one short bristle on outer front side distinctly beyond the middle; claws and pulvilli nearly as long as last tarsal joint.

Wings subhyaline; veins yellow, third with two or three bristles near base, all others bare; fourth vein broadly curved without a definite angle or stump, nearly straight beyond bend; first posterior cell narrowly open in the wing tip; hind cross vein perpendicular to fourth vein, about equidistant from bend and small cross vein; last section of fifth vein very short, hardly one-fifth the preceding section; costal spine present, usually prominent and doubled.

Female.—Front 0.32 of head width (average of six, 0.33, 0.30, 0.33, 0.31, 0.35, 0.33); inner orbits parallel from vertex to base of antennae; vitta brown, about one-half the width of parafrontals, which are thinly gray pollinose reflecting blackish above; the usual two pairs orbitals present; the uppermost frontals large and directed posteriorly outward; outer verticals about one-half as long as the inner ones; antennae, thorax, scutellum, and abdomen more yellowish and wings broader than in male. Genital segments as in *obscura*.

Length: Male, 5 to 6.5 mm.; female, 4.5 to 6.5 mm.

Described from 10 males and 8 females, all collected at College Station, Tex., March to June, 1919–1928 (H. J. Reinhard).

Type.—Male, Cat. No. 41985, U.S.N.M. Four paratypes, including both sexes, also deposited in the National Museum.

This species is very closely allied to the genotype *obscura*, from which it differs in the very narrow front of the male, the yellow ab-

domen in the female and yellow legs in both sexes. The host relationships of *flavescens* are unknown.

Genus OPSODEXIA Townsend

Townsend established the genus by the mere designation of a type species² without giving any description of the generic characters. The type of *Opsodexia* is *Chaetona bicolor* Coquillett. I am indebted to Dr. J. M. Aldrich for pointing out these facts to me in correspondence and placing two apparently undescribed species at my disposal.

Generic characters, from the type species.—Postscutellum only slightly developed and membranous above. Occiput somewhat swollen below; cheeks one-fourth the eye height. Front in male greatly narrowed above; frontals in two rows, stopping at base of antennae, the uppermost hairlike situated considerably before anterior ocellus. Antennae inserted slightly below middle of eye, slightly shorter than face, third joint three times the length of second; arista with long hair above and beneath. Face not keeled; ridges flattened below, with a few short bristles above vibrissae, which are well developed and situated on level with oral margin; parafacials narrow, with short hairs above. Proboscis short, fleshy; palpi normal. Eyes bare.

Thoracic chaetotaxy: Dorsocentral 2, 3; acrostichal 0, 1 (in transverse line with hindmost pair of dorsocentrals); humeral 2; post-humeral 1; presutural 1; notopleural 2; pteropleural 0; supraalar 3 (posterior one hairlike); intraalar 2 (none near suture); postalar 2; sternopleural 2; scutellum with one marginal pair near base, a strongly developed decussate apical pair, and a pair of rather weak preapical and discal; disk with numerous erect fine hairs.

Abdomen without discal macrochaetae except on fourth segment; segments 2 to 4 with marginal rows; first without median marginals. Wings normal; fourth vein with an oblique bend ending at or just before apex; hind cross vein oblique to fourth, which it joins slightly nearer the bend than small cross vein; last section of fifth vein very short.

The genus resembles *Opelousia* in having a short fleshy proboscis; flat unkeeled face; front of male greatly narrowed above without any frontal bristles immediately before triangle, the uppermost being very small; a conspicuous patch of infrasquamal hairs; no presutural acrostichals, etc. It differs principally in the slight development of the postscutellum, arista with longer and denser hairs; hind cross vein less erect; parafacials with short hairs above.

² Proc. Biol. Soc. Wash., vol. 28, p. 20, 1915.

KEY TO SPECIES OF OPSODEXIA

1. Abdomen yellow-----bicolor Coquillett.
 Abdomen black-----2.
2. Legs yellow; abdomen without discals; wings hyaline.
 abdominalis, new species.
 Legs black; abdomen with discals; wings distinctly infuscated.
 cruciata, new species.

OPSODEXIA ABDOMINALIS, new species

Male.—Front at narrowest part 0.11 of head width; parafrontals silvery, narrowed before vertex and widening rapidly below, with a few short inconspicuous hairs outside the frontal rows; median stripe blackish, considerably broader than the parafrontal at base of antennae, greatly narrowed posteriorly but distinctly wider than the anterior ocellus; frontals in two diverging rows of six or seven rather short bristles, stopping at base of antennae, the uppermost pair hairlike and situated some distance before the ocellar triangle, which bears a pair of strong, proclinate, nondivergent bristles midway between the anterior and posterior ocelli, several long bristles present on posterior margin of triangle; orbitals none; inner verticals well developed, curving posteriorly; parafacials strongly divergent below, shining silvery, with one or two short hairs on upper extremity, about equal to width of third antennal joint; facial depression shallow, without a carina, densely gray pollinose on reddish background; ridges flattened below, becoming sharp and more prominent above, with one strong and several weaker bristles above vibrissae, which are situated on level with oral margin; antennae three-fourths the length of face, basal joints yellow, third joint blackish, pubescent, about twice the length of second joint; arista yellowish beyond the briefly thickened black base, with moderately long hair on upper side extending more than halfway to tip, and a few short inconspicuous hairs beneath near the base, penultimate joint longer than broad; proboscis short, fleshy; palpi black, smaller than usual, hardly thickened apically; cheeks one-fourth the eye height, very thinly gray pollinose on red ground color; occiput somewhat swollen below, covered with a thin layer of gray pollen and bearing only short black bristly hairs arranged in irregular rows above; eyes bare.

Thorax and scutellum black, with rather uniform gray pollen which appears denser when viewed from the front; mesonotum, except immediately in front of transverse suture, subshining in rear view, without any distinct vittae. Chaetotaxy: Humeral 2; posthumeral 3; presutural 1; notopleural 2; pteropleural 0; acrostichal 0, 1 (in transverse row with posterior dorsocentrals); dorso-central 3, 3 (anterior slightly outside the row); intraalar 3 (anterior

one hairlike); supraalar 3; postalar 2; sternopleural 2, 1; scutellum with two pair of lateral bristles, the posterior ones largest; a well-developed decussate apical pair; preapical pair also well developed; discal pair hairlike; postscutellum only slightly developed, membranous above; infrascumal hairs present; halteres yellow; calypters tawny.

Abdomen black, with dense gray pollen that extends to the hind margins of all segments, black reflecting spots on segments 3 and 4 and a narrow dark vitta widening basally apparent when viewed from behind; first segment with a row of marginal bristles which are hairlike or incomplete above; segments 2 and 3 each with a complete marginal row, no discals present; fourth segment with a marginal row and numerous almost equally strong irregularly placed discals; first genital segment rather large, black, tinged faintly with yellow apically, a narrow shining black transverse band crossing the middle, otherwise thinly gray pollinose; fifth sternite unusually prominent, deflected downward at a rather sharp angle, with a broad U-shaped incision, the lobes thickly covered with rather fine short black hair; genitalia not in position to examine.

Legs yellow, except tarsi, which are black; claws and pulvilli elongated; middle tibia with one bristle on the outer front side; hind tibia not ciliate.

Wings large, normal shape, tinged with yellow at base and along costal margin; all veins light yellow, bare, except third, which has three or four short black bristles at the base; fourth vein broadly curved without a definite angle at bend, ending at wing tip, narrowly closing first posterior cell; hind cross vein about midway between bend and small cross vein; costal spine distinct, doubled.

Length, 7 mm.

Described from one male received from Dr. J. M. Aldrich, collected August 19, 1914, Fabyans, N. H. (C. H. T. Townsend), on flowers of *Solidago*.

Type.—Male, Cat. No. 41986, U.S.N.M.

The black densely gray pollinose abdomen readily separates the species from *bicolor*. It differs further from that species by having the fourth vein broadly bowed without a definite angle, arista with shorter hairs above and practically bare beneath, etc.

OPSODEXIA CRUCIATA, new species

Male.—Front greatly narrowed above and hardly as wide as ocellar triangle; median stripe blackish, triangular below, reduced to a line posteriorly, extending on each side of triangle to inner vertical; parafrontals narrow above, widening almost to width of the median stripe at base of antennae; frontals in two rows of about eight bris-

tles hardly extending to base of antennae, the two uppermost pairs larger than the median ones and cruciate near base, the anterior bristles very weak, the pair above these fully as strong as the vibrissae, horizontal, cruciate at middle; ocellars very minute, proclinate; orbitals none; inner verticals well developed, erect, cruciate near tip, the outer ones hairlike; parafacials gray pollinose, with a few short inconspicuous hairs above, at narrowest point about two-thirds the width of third antennal joint; face shallow, not keeled; ridges rather flattened, with a few bristles above vibrissae, which are situated about on level with oral margin; antennae slightly shorter than the face, yellowish, infuscated apically, third joint about two and one-half times the length of second; arista of moderate length, yellowish, slightly thickened at base, with long hairs above extending from base to tip, beneath bare at the base with shorter hairs beyond extending to tip, penultimate joint broader than long; proboscis short, fleshy, labella large; palpi blackish, rather short, the slightly thickened apex bearing a few short bristles; cheeks one-fifth the eye height, thinly gray pollinose, with numerous black hairs below; occiput gray pollinose, practically bare above, with sparse black and pale hairs below; posterior orbits gray pollinose, reduced to a line on either side of vertex; eyes bare.

Thorax and scutellum black, with gray pollen; (the mesonotum discolored, dorsal stripes probably distinct). Chaetotaxy: Humeral 3 (the inner one small); posthumeral 1; notopleural 2; pteropleural 0; presutural 2 (outer large, inner small); acrostichal 1, ? (obscured by pin); dorsocentral 2, 3; sternopleural 2; scutellum with two pairs of laterals, the posterior ones broken off but evidently large and divaricate; the apical pair also broken off but the large scars indicating strong bristles; a pair of rather weak preapical and discal bristles present, the latter wide spaced on disk which bears a number of erect fine hairs on basal margin; postscutellum very small; posterior calypters brown, anterior ones white; infrascapular hairs present; halteres brownish.

Abdomen black, with gray pollen extending over broad bases of segments 2 to 4 except on a very narrow dark median stripe, viewed from behind the pollen is changeable and has a distinct brownish tinge; first segment without median marginal bristles; intermediate segments each with a pair of discal and a marginal row; fourth with a marginal row and irregular placed discals; genital segments black, small; outer forceps lobelike, black basally, tips yellowish, broadly rounded; inner forceps widely divergent, moderately broad at base tapering to rather sharp tips which are yellowish, otherwise black; fifth sternite normal, with a rather shallow broad V-shaped incision, lobes bearing numerous fine black hairs.

Legs black, all the claws and pulvilli enlarged, the latter whitish; hind tibia with three bristles near base, middle, and apex on the outer posterior edge, and three on the hind side spaced about as the former; middle tibia with one small bristle on outer front side considerably beyond the middle.

Wings distinctly infuscated throughout; third vein with four or five bristles at base, all others bare; fourth vein with a rounded bend almost straight beyond, closing the first posterior cell rather narrowly just before the apex; hind cross vein bowed near middle, about midway between bend and small cross vein; costal spine distinct.

Length, 5.5 mm.

Described from one male specimen received from Dr. J. M. Aldrich collected at Havana, Cuba (Baker).

Type.—Male, Cat. No. 41987, U.S.N.M.

This species is not so closely related to the genotype as *abdominalis*, but is referred here principally because it has about the same type of postscutellum as *bicolor*. The main characters in which it differs are the presence of anterior acrostichals, and the large horizontal cruciate frontals above base of antennae.